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CONFIDENTIAL

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REPLY TO ATTENTION OF:

51161/EP-3006.01

25X1

JUL 8 1958

REGISTERED MAIL - RETURN RECEIPT REQUESTED

25X1

Dear Sir:

The enclosed memorandum will provide you with our comments on our investigation of your conveyor system problem to date. We await your advice as to further action.

Very truly yours,

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Vice President & General Manager

JMJ/dfw

Enclosure: Memorandum dated 7 July 1958 (two copies)

cc: Contracting Officer w/1 cy. encl.

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INTEROFFICE MEMORANDUM

7 July 1958

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To:

From:

25X1 SUBJECT: ADDITIONAL COMMENTS ON PROPOSAL FOR CONVEYOR SYSTEMS - EP-3006.01
(Reference IOM of June 19, 1958,

. . . . . .

1. The conveyor systems proposals described in my IOM dated June 19, 1958 were reviewed with our prospective customer on June 30, 1958 and it was agreed that we would further consider the possible ways of building the required conveyor.

2. With regard to our previous proposal, the principal question has to do with the coefficient of friction using the Teflon slide. Some additional tests and inquiries of the DuPont Company were made. The reports essentially confirm our test results which indicate that for our application the coefficient of friction may vary between .10 and .26. The higher values occur as the velocity increases with .26 expected at a velocity of about 10 feet per second. There is no special lubricant for the Teflon but any lubricant will provide some improvement.

3. In summary, it appears that the Teflon slide arrangement will provide a lightweight system but it may require excessive effort to move the boxes. It is estimated that this force may be in the order of 60-90 or 100 pounds and could even reach 125 pounds. We believe the only way to prove the acceptability of such a system would be to actually build at least a portion of a full scale device. Our previous proposal with a total estimated cost-plus-fixed-fee of $15,022.68 is still effective and would cover the development and construction of one such conveyor system. The estimated weight of this system is 500 pounds but we cannot guarantee that the forces required will be satisfactory.

4. Other such systems discussed included a belt transfer system which would use a continuous belt running over a series of rollers. This is a standard type of conveyor system but would be unsuitable in our application since the boxes are lined up continuously along the conveyor.. This system could only be used if the boxes were handled one at a time along the belt transfer units. Since this is believed to be unacceptable this system has been discarded.

5. Another simple system suggested was to use a waxed or lubricated smooth metal chute. Some tests using a 100 pound box simulating the actual package produced friction coefficients in the range of .12 to .17. These tests were quite limited. The variable obtained indicated that the forces required would be approximately the same as for the Teflon slide. This system therefore has the same possible disadvantages as the Teflon slide.

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6. A standard type of skate roller conveyor system was reconsidered and a few tests using the 100 pound box were conducted. It had earlier been a consensus of opinions of ours and the conveyor manufacturers that the problem of the ropes climbing under the successive rollers would produce an unsatisfactory system requiring excessive forces. Our limited tests indicated that while such an operation would be quite bumpy the forces required are lower than those quoted above for a slide system. Using 6 inch rollers and no pallets it is estimated that an 80 pound force would be required to start moving the 600 pound box and 45-50 pounds of force would keep it moving in the level condition. Small rollers without a pallet produced very much higher forces.

7. If a simple pallet is used with the small rollers the forces will further reduce and as expected the motion is smooth. On a basis of our limited tests we estimate that a 600 pound box on a pallet on a 2-1/2 inch skate roller conveyor requires 70 pounds to start and 35 pounds to keep it moving. This setup of course permits the conveyor to be mounted closer to the floor than the larger roller system. The approximate weight of either of these conveyor systems is 1,000 pounds.

8. Our previous proposal for a total CPFF of $12,499.53 covers the cost of designing and building one conveyor system using the smaller rollers. The estimated cost for the larger roller system would be slightly higher than this figure but should not exceed the $15,000.00 estimate for the Teflon slide system.

9. In summary, it appears that there is no significant difference in cost for the several systems considered. The slide systems have the advantage of reduced weight and simplicity with a disadvantage of approximately double the force required to move the package. If a little time and money can be invested in the development and testing of the simplest systems, I would recommend pursuing them further. If, however, it is desired to insure quickly delivering a reliable system, I would recommend the small roller system using pallets. The estimated delivery for any of the systems considered is six (6) weeks after authorization to proceed. You will note that this is a slight modification of the previous schedule for the standard conveyor system by the addition of one (1) more week to allow for some nonstandard parts necessary to help reduce weight.

[redacted]

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